Solutions for Demanding Applications

VARTECH
SYSTEMS INC.

Industrial CRT and Flat Panel Displays

VT104 Ultra High Bright Series

VT104CHBU · VT104PHBU · VT104WHBU · VT104YHBU

User's Guide

Read these instructions completely before attempting to operate your new Color Display.

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Section

1

INTRODUCTION

1.1 About LCD Monitors

What you gain by using an LCD monitor in your industrial controls

LCDs are the future of display technology. Although CRTS have dropped in cost significantly, they do not offer the performance, reliability, and mounting options available with LCDs. LCD monitors consist primarily of an LCD, Video Board and a Back Light video. The LCD determines to a large extent the viewing angle, brightness and contrast. Beyond that it is the function of the video board which converts the analog RGB (Red, Green, Blue) signals from a standard video card to a high quality, digital RGB that the LCD can display.

Recently the video card has taken on a new role. It is the responsibility of this device to “scale” a particular video resolution to the “native” resolution of the LCD. Simply, consider that a computer is putting out a VGA [640x480] resolution signal, yet the LCD that is connected is an XGA [1024x768] display. The displayed picture would be in the center 1/3 of the LCD. With the introduction of the scaling engine. The converter will mathematically recalculate the 640x480 to 1024x768. This may sound simple but it is in fact a complex algorithm that adjusts for different aspect ratios and pixel alignment, essentially smoothing text and graphics to produce a picture that is pleasant to the eye.

1.2 Product Safety Precautions

⇒ Ensure that sufficient space is available around the display to provide the circulation necessary for cooling.

⇒ Ensure that the ambient air temperature will not exceed the specified maximum temperature.

⇒ Do not attempt to service this display yourself. The rear chassis has a seal so that non qualified personal will not expose themselves to dangerous voltages or other risks.

⇒ To protect from electrical shock, unplug the display power supply from the wall before moving.

⇒ Do not expose the display to direct sunlight or heat.

⇒ Do not use this display near water

⇒ Do not place any heavy objects on the power cords. Damage may cause electrical shock.

⇒ Unplug the power supply from the wall or unit if one of the following conditions exists.
    - ⇒ Power cord or plug is damaged or frayed
    - ⇒ Liquid is spilled into the display or the display is exposed to rain or water.
    - ⇒ The display does not operate normally when the operating instructions are followed.
    - ⇒ The display has been dropped or the enclosure has been damaged.
    - ⇒ The display exhibits a distinct change in performance, indicating a need for service.

2.1 VT104HBU Series Display Features

⇒ The VT104HBU is capable of displaying 262,144 colors in a continuous spectrum. The high contrast LCD enhances the image with no geometric distortion.

⇒ The VT104HBU Series directly accepts an analog 5 wire RGB with separate H/V.

⇒ The VT104HBU Series is auto synchronous adjusting the display to the appropriate input between VGA or XGA.

⇒ The VT104HBU Series is available in Chassis, Panel, Wall / Arm Mount or Yoke Mount industrial packages.

⇒ The VT104HBU Series is supplied with a Anti-Reflective Screen unless equipped with an optional Touch System.

⇒ The VT104HBU Series uses +12VDC @ 2.1A as the standard power input on all models.

⇒ All models can be configured with an optional or 90-264VAC universal power supply.

2.2 Unpacking and setting up your display

Your LCD monitor package will consist of the components listed below. Open shipping container and lay all components on a flat clean surface.

2.3 What is included with your display

- ⇒ VT104CHBU or VT104PHBU or VT104WHBU or VT104YHBU LCD Monitor
- ⇒ 5 ft Video Cable.
- ⇒ 10-32 Mounting Hardware. (For use with Panel Mount only)
- ⇒ 6 ft RS232 Touch Interface Cable (Optional when touch is installed)
- ⇒ CD ROM with Touch Screen Drivers (Optional when touch is installed)
- ⇒ Users Manual

2.4 Connecting the Display

1. Connect all cables to the computer first. This would include the VGA cable and the optional RS 232 serial touch screen connection.
2. Once the 115/220VAC connection is made, the display is active.
3. If your computer was off, turn on your computer.
4. Your display should now operate as a normal computer display showing your windows or whatever video is being sent to the flat panel.

Note: If for any reason the display goes blank and gives an “out of Range” or “No Input Signal”, your computer or video source is putting out a signal that is out of range of the LCD’s video board. If this happens, reboot the computer or video source and make sure you are inputting the correct signal. If the display doesn’t work properly, it may be because:

(a)The resolution is to high or low for the LCD.

(b)The refresh rate is set to high. Refresh on an LCD is different than a CRT. Set the refresh to 60Hz. CRT’s need a high refresh rate to avoid flicker. The refresh rate has no impact on LCD’s.

(c)The power source is incorrect.

(d)The unit is malfunctioning. If you believe this to be true, disconnect the video cable from the rear of the LCD and connect to a known good computer CRT display. If the computer display is working satisfactory and the video is within the appropriate range, then contact Vartech Customer service for a RMA number at 800-223-8050.

2.5 Signal Connections

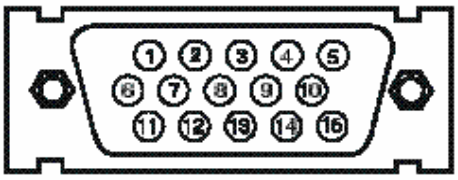
To avoid irregular operation and /or damage to the display, please insure correct video is being supplied as shown on the following page.

2.5 Signal Connections Cont.

You can use an HD-15 connector cable or a BNC adapter cable to connect the flat panel monitor to the host computer. The HD-15 video cable (supplied in the kit) you use with this monitor is equipped with a conventional HD-15 connector at each end.

Note:
The following figure is the view looking into the pin end of the male connector or solder term end of the female connector.

Pin assignments for the HD15 video connector.	
Pin	
1	Red Video
2	Green Video
3	Blue Video
4	Not Used
5	Return
6	Red Video Ground
7	Green Video Ground
8	Blue Video Ground
9	No Connection
10	Sync Ground
11	Not Used
12	Bi-Directional Data
13	Horizontal Sync
14	Vertical Sync
15	Data Clock (SCL)



Standard Resolutions Supported

⇒ 640 x 480 (VGA)
⇒ 800 x 600 (SVGA)
⇒ 1024x768 (XGA)

Composite Video Input Connector: CVBS 1.0V p-p
S-Video: S-VHS
LUMA Signal Input 0.7V p-p
CHROMA Signal Input 0.7V p-p

2.5 Signal Connections Cont.

Optional BNC Adaptor Cable

A 5BNC-to-HD15 adapter cable is available. The functions of the cables are described below.

⇒ **R**, **B**, and **G**: Red, Green, and Blue input connectors to establish color. These are used for RS-343 analog signals.

⇒ **HS/CS**: Separate horizontal/composite sync signal from the video source.

⇒ **VS**: Separate vertical sync signal from the video source.

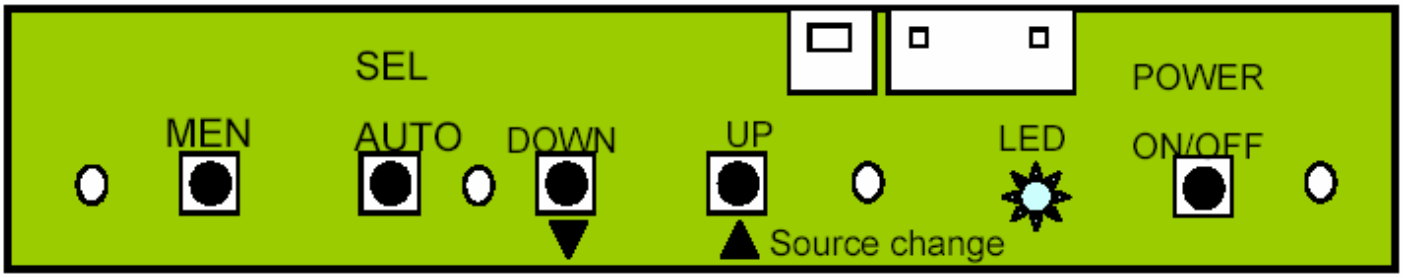
BNC Adapter Cable

This table describes the signal types you can use with the connectors:

BNC Signal Types						
BNC Signal Type	**Description**	**R**	**G**	**B**	**HS/ CS**	**VS**
Sync-on-Green	Use the three video connectors. Horizontal and vertical syncs are supplied on the green video line.	X	X	X		
Composite Sync (Not available)	Use the three video connectors plus the horizontal sync/ composite sync input	X	X	X	X	
Separate Horizontal and Vertical Sync.	Use the three video connectors plus the horizontal sync/ composite sync and vertical sync input.	X	X	X	X	X

3.1 Adjusting the display

OSD (On Screen Display) Adjustment—OSD enables the user to adjust the appearance of the image displayed on the LCD screen. Please refer to the OSD dimensional drawing for the designation of the push buttons and the indicator LED.

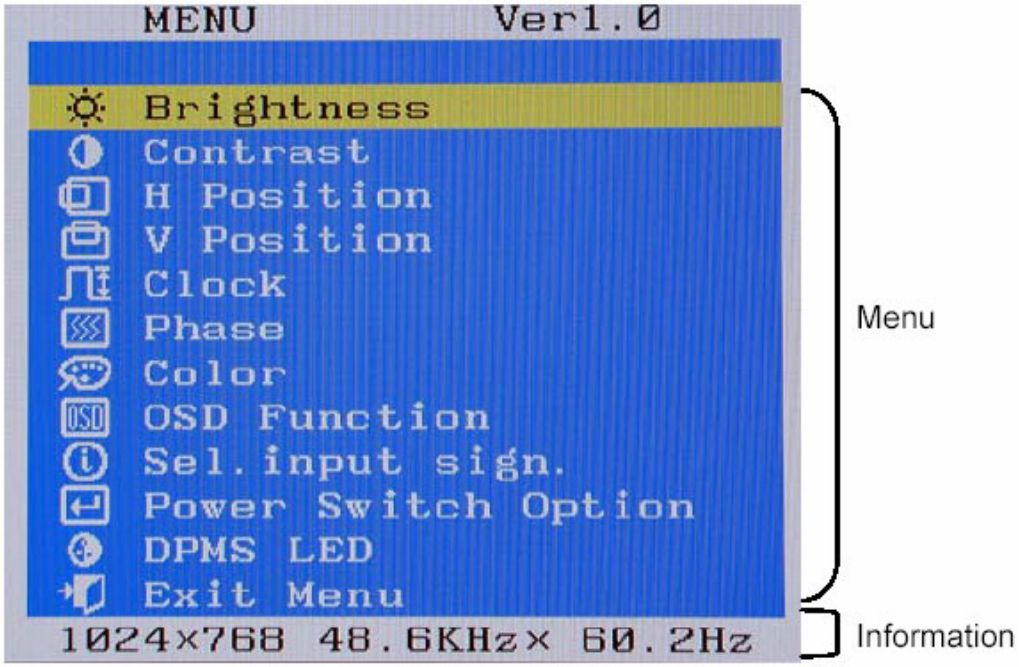


BUTTON	FUNCTION	STATUS	HOT Key
POWER	Power on/off	On/Off	
MENU	Activate menu		
SELECT	Menu Select		Auto setting
LED	Indicates operation status	Green / Off / Amber	
UP / DOWN ▲ ▼	Cursor Control Increment / Decrement value		Source change

The chosen OSD settings will be stored in memory. The OSD menu can be cleared from the screen by moving the selection bar to the EXIT MENU icon pressing the SEL button, otherwise it will be automatically cleared after a few seconds of non-use.

3.2 Adjustment Procedure

OSD Main Menu



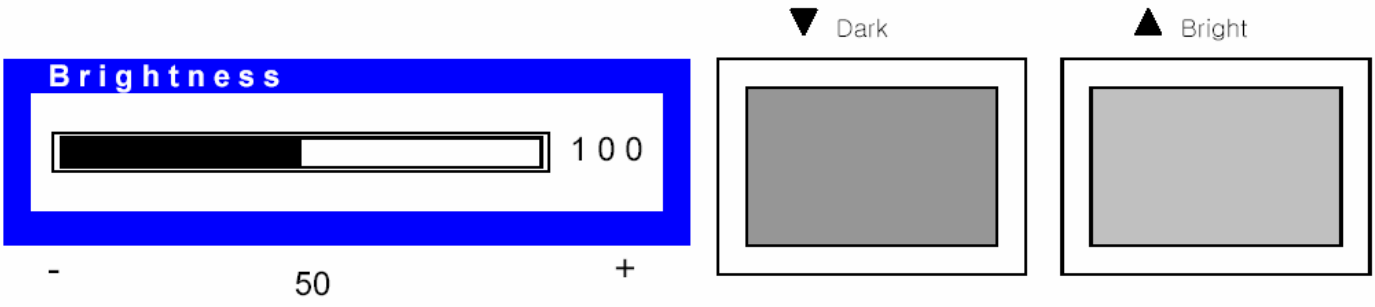
- Brightness: Increase/decrease panel brightness level, total: 100 steps
- Contrast: Increase/decrease panel Contrast level, total: 100 steps
- H, V Position: Image H, V position control total: 100 steps
- Clock: Fine tune the number of sampled data.
- Phase: Fine tune the position of sampled data (adjust image quality), total: 31 steps
- Color: Color temperature control, total: 100 steps
- OSD Function: OSD position, OSD Language, OSD Off Timer control
- Sel, input sign: Select input signal (analog, composite, S-Video)
- Power Switch Option: Select Power Switch on/off.
- DPMS LED: If when the DPMS select Amber LED color is Amber, otherwise LED is off.
- Information: Displays current video mode and frequency

3.2 Adjustment Procedure Cont.

OSD Function

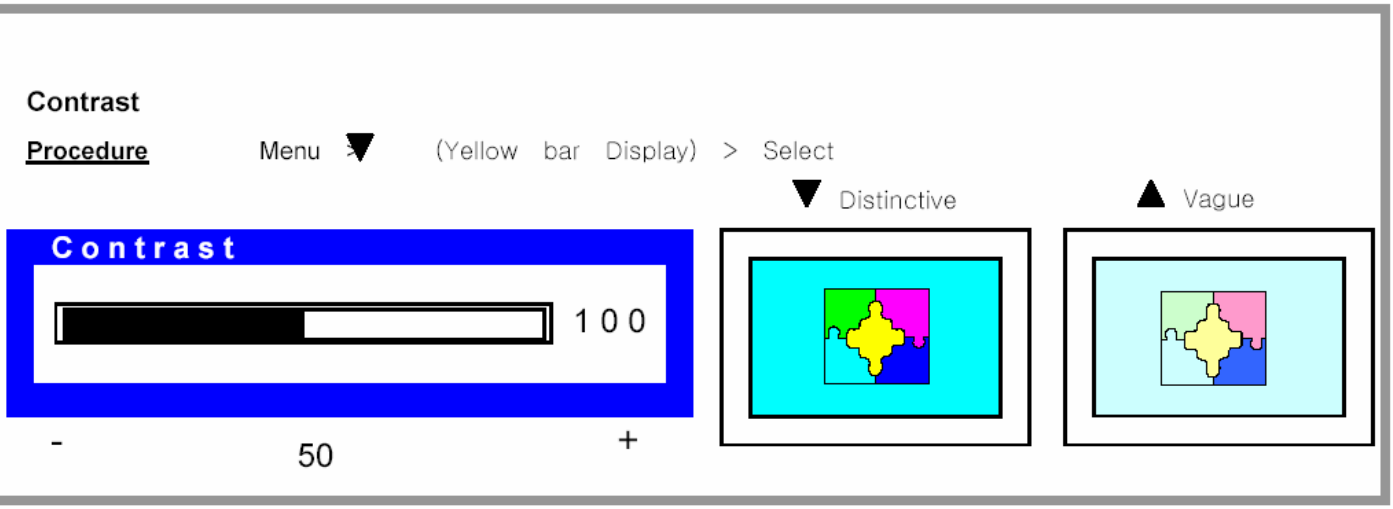
Brightness

Procedure Menu > (Yellow bar Display) > Select



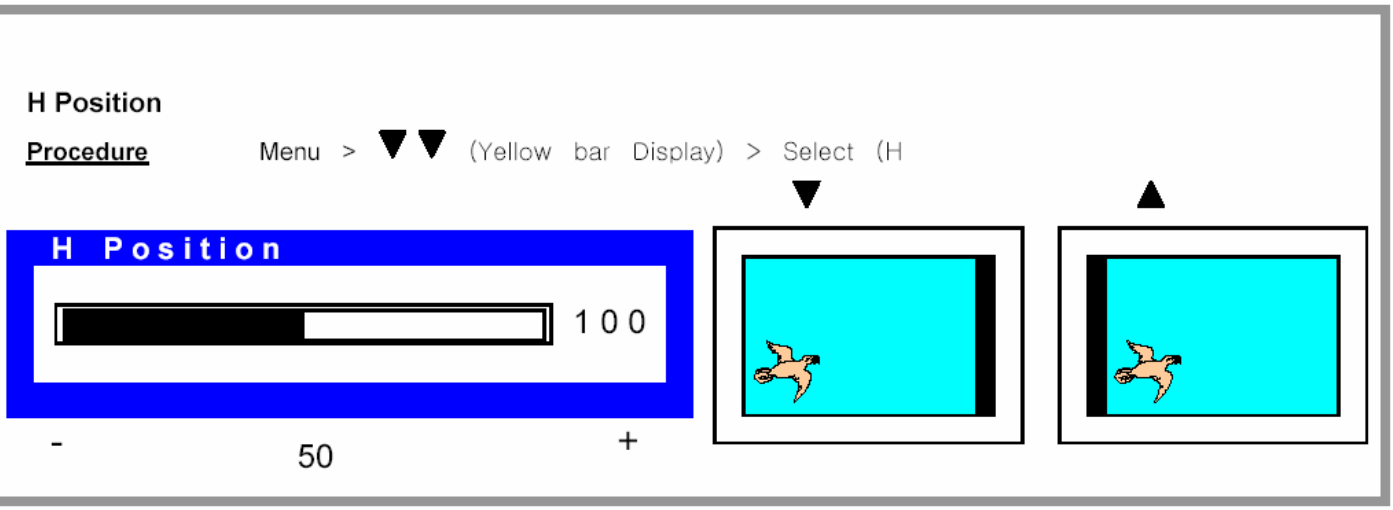
Contrast

Procedure Menu ▼ (Yellow bar Display) > Select



H Position

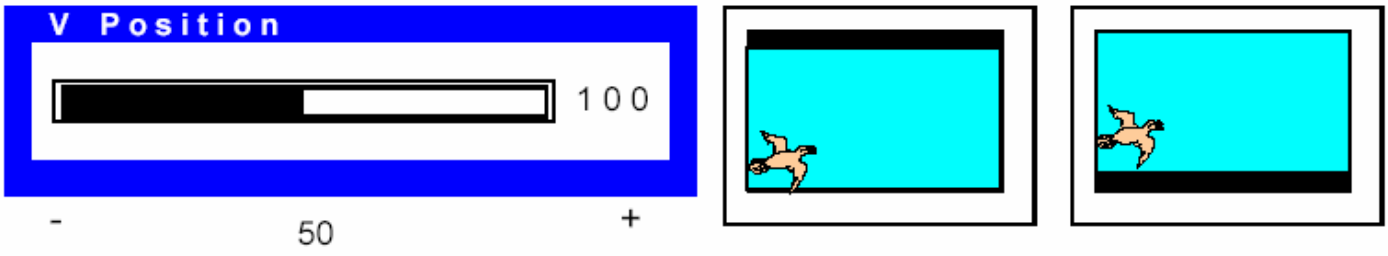
Procedure Menu > ▼▼ (Yellow bar Display) > Select (H

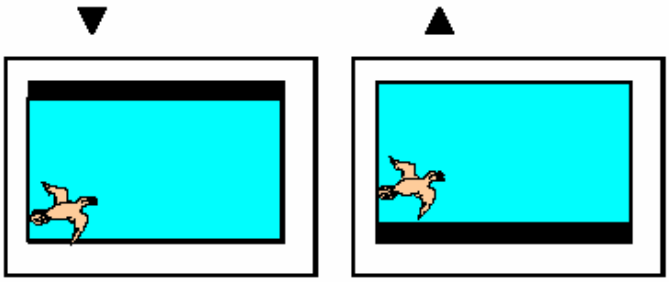


3.2 Adjustment Procedure Cont.

V Position

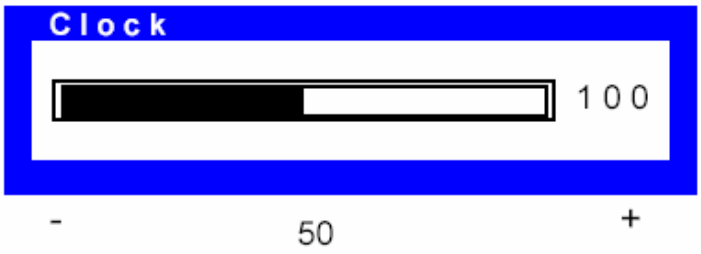
Procedure Menu > ▼▼▼ (Yellow bar Display) > Select (V

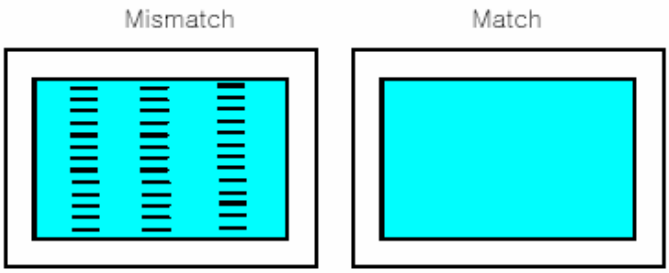




Clock

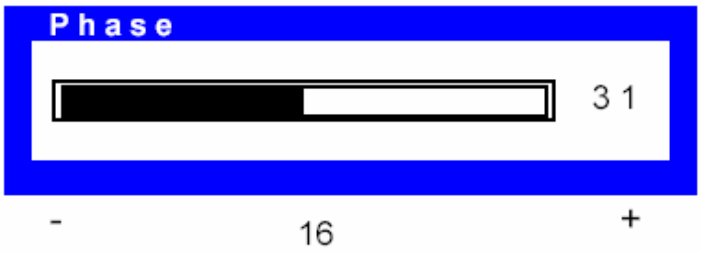
Procedure Menu > ▼▼▼▼ (Yellow bar Display) > Select

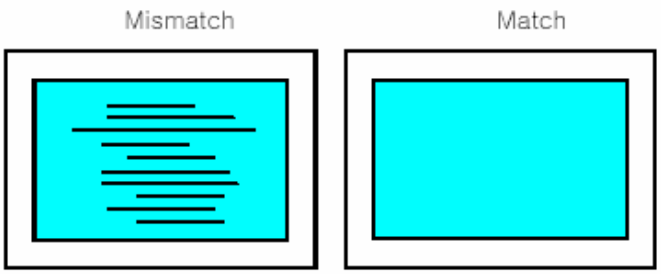




Phase

Procedure Menu > ▼▼▼▼▼ (Yellow bar Display) > Select

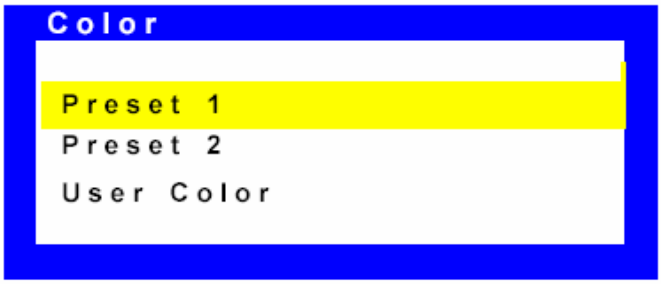




3.2 Adjustment Procedure Cont.

Color

Procedure Menu > ▼▼▼▼▼▼ (Yellow bar Display) > Select (Sub Menu 1

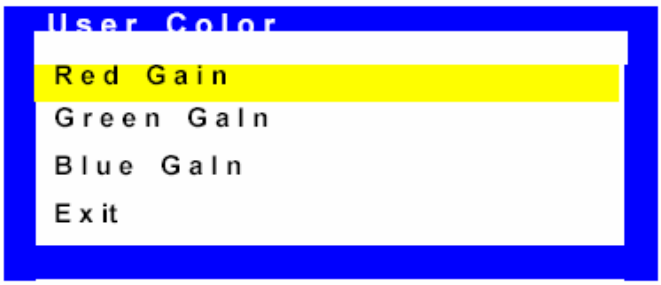


Preset 1: Default

Preset 2: bluish white

User Color: User Color Control

Sub Menu 1 > ▲ (Yellow bar Display) > select (Sub Menu 2 Display)



Sub Menu 2 > Select (Yellow bar Display) > Red Color Control

Sub Menu 2 > ▼ Select (Yellow bar Display> Green Color Control

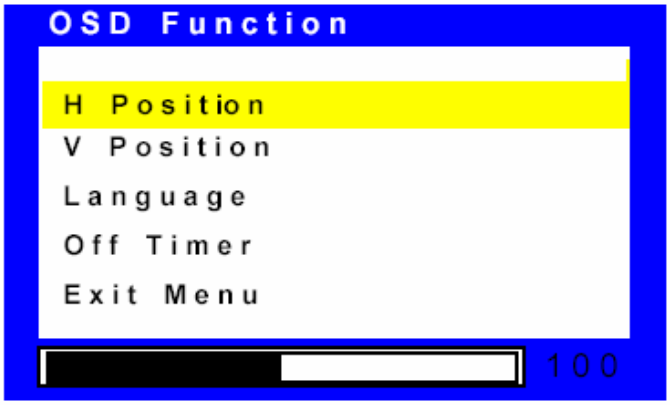
Sub Menu 2 > ▼▼ Select (Yellow bar Display> Green Color Con

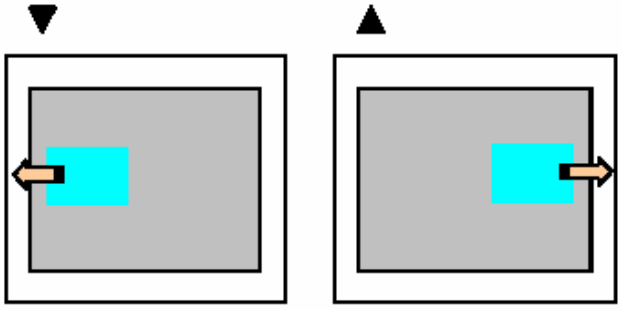
\- 50 +

3.2 Adjustment Procedure Cont.

OSD Function

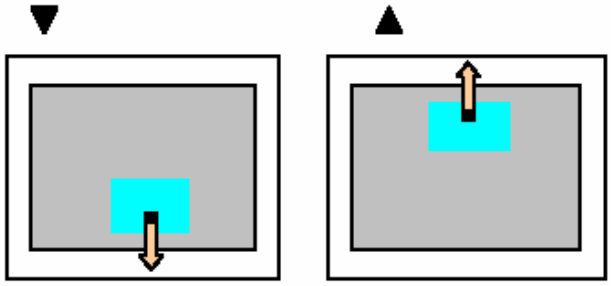
Procedure Menu > ▼▼▼▼▼▼▼ (Yellow bar Display) > Select (Sub Menu 1 Display) <Select





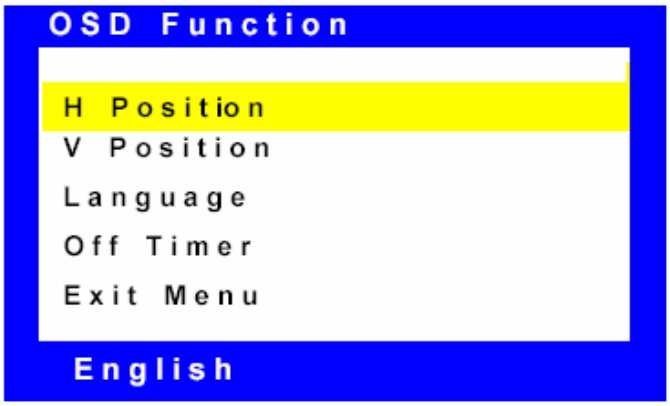
Select (Sub Menu 1 Display) <

Select



Select (Sub Menu 1 Display) < ▼▼ Select

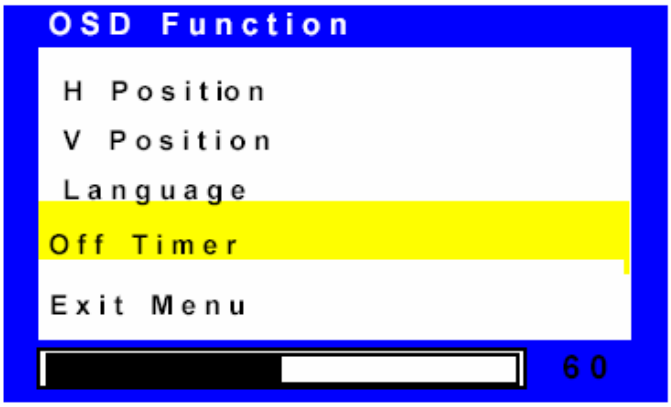
--> Language Control (English → ▼ Español → ▼ Flancais → ▼ Deutsch → ▼ Italiano)



3.2 Adjustment Procedure Cont.

OSD Function

Select (Sub Menu 1 Display) < ▼▼▼ Select



OSD Menu Display Timer Control

SEL, INPUT SIGN.

Procedure Menu > ▲▲▲▲ (Analog RGB Display) >Select

▼ (Video input)<Select

▼▼ (S Video Input)<Select

Power Switch Option

Procedure Menu > ▲▲▲(Magenta bar Display) > Select

3.2 Adjustment Procedure Cont.

DPMS LED

Procedure Menu >▲▲(Magenta bar Display) > Select

AUTO SETTING . . .

Procedure Select

Section

4

TOUCH SCREEN

4.1 Introduction

Touch screens are a common means to interface operator inputs to a system. The universal standard of Windows GUI (Graphical User Interface) has significantly increased the use of touch screens.

There are four main touch technologies. The technologies are resistive, surface acoustic wave (SAW), capacitive, and infrared (IR). Each touch technology has advantages and disadvantages based on different user applications.

4.2 Installation

All Vartech Systems displays configured with a touch screen are supplied with a CDROM which includes user manuals, application software, and drivers for various operating systems. Insert the supplied CDROM into a CDROM drive and follow the installation instructions that will appear on the screen.

Limited technical support is available by contacting Vartech Systems customer support at 800-223-8050.

Troubleshooting	
Trouble	**Troubleshooting Tip**
No Picture	⇒ The signal cable should be properly connected to the display card and computer. ⇒ Try disconnecting the video cable from the display and connecting to a CRT display if available to confirm the presence of proper video. ⇒ Make sure power is connected to the proper DC or AC source. ⇒ Make sure the resolution mode is supported by the display and check settings of the display card. ⇒ Confirm that the video cable is not defective.
Image Persistence	Image persistence occurs when a ghost of an image remains on the screen after the monitor has been turned off. Unlike a CRT monitor, an LCD monitor's image persistence is not permanent. To erase an image ghost, turn the monitor off for as long as the image was displayed. If the image was on for one hour and the ghost of the image remains, the display should be turned off for one hour to erase the image. To avoid this problem, use a screen saver.
Picture Quality & Image Stability	⇒ Check for proper video cable for proper grounding and shielding. ⇒ Check the signal source for proper signal. ⇒ Check for proper adjustment of the Phase and Frequency controls. ⇒ Check for proper recommended signal timing.
Green LED not lit	Check for proper power and power connections
Green LED blinking	This indicates absence of video or proper video for this display
Display image is not properly sized	⇒ Adjust the Vertical and Horizontal size controls via the OSD. (Reference setup adjustments) ⇒ Ensure that a supported mode is selected on the display card or system being used. Consult the display card or system manual for proper video.
No S-Video or NTSC operation	⇒ Check for proper connections. ⇒ Check the setup instructions for proper input selection.
If these tips do not solve your problem, contact Vartech Systems Customer Service support.	

Troubleshooting Cont.	
Trouble	**Troubleshooting Tip**
Screen is blank.	Screen saver activated. Video Cable problem. Check for proper installation Change video cable . Faulty video display. Needs Service.
Image is dim, even with brightness and contrast controls set full UP	Video cable problem. Check for proper installation of cables Faulty video source. Faulty display.
Image not centered	Reset the horizontal and vertical positioning using the on-screen menu. Check to see if video source is operating within the monitor's range
Image will not adjust	Video timing outside of range. Use the on-screen menu to ad just the Clock Setting. Make sure timing is within VESA standard.
Image is not stable.	Monitor has incorrect or bad sync signals. Check for proper video cable installation. Replace suspected faulty cable. Check to ensure that video source is operating within the display's range.
Vertical shaded bars on Screen image	Horizontal size not properly adjusted. Adjust horizontal size settings
Colors are missing	Faulty video cable. Missing from video source. Connect video source to another display
Screen jitter or noisy display	Monitor clock phase not properly adjusted
Slight distortion in text or Graphics.	Not working in native resolution.
Display is present but "bars" Appear or roll across screen	Ground loop problem between computer and display Interference from adjacent equipment
The background looks Acceptable but text and Icons seem to be missing rows of pixels	Video running interlace mode.

Section

6

CLEANING AND MAINTANENCE

Cleaning
Occasionally clean the display panel and cabinet with a soft cloth dampened (not soaked) with a mild (non-abrasive) glass cleaner. Keep turning a fresh side of the cloth toward the screen surface to avoid scratching it with accumulated grit.
Do not use paper products as they may scratch the surface. To minimize the risk of abrasion, allow the screen to stand dry.
Special care should be taken when cleaning a touch screen or polycarbonate shield that is installed over the screen. Abrasive and certain chemical cleaners can easily damage the surface.
Never use alcoholic or ammoniac cleaners to clean the polycarbonate shield or a touch screen.

Replacing a Line Cord
To avoid shock and fire hazards, the monitor's power cord should be replaced if the insulation becomes broken or if it develops a loose internal connection.

Other Maintenance
Qualified service personnel should perform all maintenance, except for the power cord replacement described above.

7.1 Panel Mount Procedure

Panel Mounting Procedure

1. Cut and drill the panel (refer to panel mount drawing). Measurements are in inches.

Panel Mounting Cutout

2. If access to the side of the monitor is not available following installation, attach the power and video cables to the side of the monitor at this time.
3. Install the monitor in the prepared cutout.
4. Install the lock nuts and washers, supplied with the monitor, behind the holes running along the sides and top/bottom of the cutout in the panel. Extra lock nuts and washers are provided.

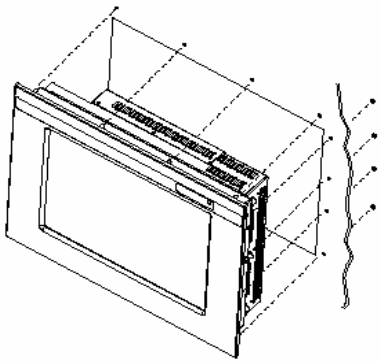
Note: Use #10-32 nuts for mounting.

5. Tighten all mounting nuts evenly to a torque of 24 inch-pounds.

ATTENTION: Mounting nuts must be tightened to a torque of 24 inch-pounds to provide panel seal and avoid potential damage. Vartech Systems assumes no responsibility for water or chemical damage to the monitor or other equipment within the enclosure due to improper installation.

6. Attach the power and video cables to the side of the monitor if you have not already done so.

Generic Panel Mount Diagram



Section

8

SPECIFICATIONS

ENGINEERING SPECIFICATIONS	
Panel Size	10.4”
Type	Active Matrix Color Thin Film Transistor (TFT)
Resolution Capabilities	VGA to XGA
Pixel Pitch	.2055 mm
Active Display Area	8.284” (w) x 6.214” (h) 210.432mm (w) x 157.824mm (h)
Pixel Format	640 x 480, 800 x 600, 1024 x 768
Viewing Angle (Left/Right)	80º / 80º
Viewing Angle (Up/Down)	80º / 80º
Contrast Ratio	450:1 typical
Brightness	1200 Nits typical
Response Time	(T_r + T_d) 34ms typical, 40ms max
Back Lights	40,000 Hrs. CCFL
Video Connector	HD15, S-video, Composite
Colors Supported	262,144 (6 bit)
Video Input	Analog 0.7v p-p/75 ohm, NTSC/PAL
Sync	Separate H/V, Combined
Input Voltage	+12VDC @ 2.1A optional: 90-264 VAC universal
Power consumption	25 Watts typical
Operating Temperature	0 to 50ºC
Storage Temperature	-20 to 60ºC
Operating Humidity	10 to 95%NC
Storage Humidity	10 to 95%NC
Operating Altitude	Up to 10,000 ft
Storage Altitude	Up to 40,000 ft
Optional Touch Screen	Capacitive or Resistive

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